

### ABSTRACT OF THE DISCLOSURE

An apparatus (10) for converting a hydrocarbon-containing flow of matter (4) to a hydrogen-enriched fluid flow (10) includes a heating apparatus (5) for production of a heating stream (6), whereby the flow of matter (4) is converted to the hydrogen-enriched fluid flow (10) in a first converter (2) as well as in a second converter (3) arranged behind the first converter in a flow direction. A heating element (8) that is flowed-through by the heating stream (6) is provided for heating at least one of the two converters (2, 3). The invention provides an improved system efficiency, in that a disadvantageous cooling of the second converter (2) is effectively avoided. This is achieved according to the present invention in that at least in one operating phase, the heating stream (6) flows to the second converter (3) completely in a counterflow to the flow of matter (4).